

VII.—Notes on the Braconidæ in the British Museum.—  
 II. On the Australian Species of Cardiochilinæ and  
 Doryctinæ. By ROWLAND E. TURNER, F.Z.S., F.E.S.

Subfamily *CARDIOCHILINÆ*, Ashm.

GENUS *CARDIOCHILES*, Nees.

*Key to the Australian Species.*

♀ ♀.

- |                                                                                                                                       |                                |
|---------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|
| 1. Hind metatarsus distinctly broadened, not cylindrical; head and abdomen black, the basal abdominal segment sometimes reddish ..... | 2.                             |
| Hind metatarsus cylindrical; head and abdomen mostly red or fulvous .....                                                             | 3.                             |
| 2. Thorax and abdomen entirely black .....                                                                                            | <i>C. assimilator</i> , Turn.  |
| Thorax and basal abdominal segment red....                                                                                            | <i>C. dissimulator</i> , Turn. |
| 3. Vertex entirely black .....                                                                                                        | <i>C. verticalis</i> , Turn.   |
| Vertex red or fulvous .....                                                                                                           | 4.                             |
| 4. Wings strongly infusate on the apical third; costa and basal half of stigma yellowish .                                            | <i>C. rufator</i> , Roman.     |
| Wings uniformly subhyaline; costa and stigma fuscous, a yellowish spot at the base of the stigma .....                                | <i>C. uniformis</i> , Turn.    |

*Cardiochiles assimilator*, sp. n.

♀. Nigra; femoribus anticis apice, tibiis anticis subtus, tarsisque anticis et intermediis, unguiculis exceptis, albido-brunneis; calcaribus albis; alis fusco-hyalinis, tertio apicali fuscis, stigmatе venisque nigris; mandibulis fusco-ferrugineis.

♂. Feminæ similis, tarsis intermediis nigris; alis fuscis unicoloribus.

Long. 5 mm.

♀. Head nearly as broad as the thorax; antennæ 37-jointed, the second joint of the flagellum distinctly longer than the third. Vertex and face shining, minutely punctured, the checks a little shorter than the breadth of the mandibles at their base. Thorax minutely punctured, shining, the notauli crenulated. Pubescence white, long, and rather close on the sides of the scutellum and on the dorsal surface of the median segment; the enclosed area of the median segment ovate, rather narrow, the longitudinal

carina on each side further at the base from the enclosed area than from the lateral margin of the segment. Abdomen smooth and shining; sheath of the ovipositor short and broad, subtruncate at the apex, scarcely one-third of the length of the abdomen. Hind metatarsus somewhat broadened, especially at the base, not cylindrical. Neuration as in *C. saltator*, Fabr., but the distance between the nervulus and the basal nervure is only one-quarter of the length of the first discoidal cell on the discoidens, not one-third as in *saltator*.

*Hab.* Kuranda, N. Queensland (*Turner*), May 1913; Mackay, Queensland (*Turner*) (type), March to May 1900, August 1891.

The wings are hyaline on the basal half in the specimen from Kuranda. This species is very nearly related to *C. fuscipennis*, Szép., and *C. fasciatus*, Szép., from New Guinea, and may prove to be only a race of one of them, but the descriptions are very brief. *C. piliventris*, Cam., and *C. trichiosoma*, Cam., from Waigiou, are also very closely related.

*Cardiochiles dissimulator*, sp. n.

♀. Nigra, thorace, segmento mediano, segmentoque dorsali primo area mediana rufis; clypeo, mandibulis, apice excepto, palpis apice, femoribus anticis apice, tibiis anticis, tibiis intermediis subtus et basi, tarsisque anticis et intermediis ferrugineis; calcaribus albidis; alis hyalinis, apice ad medium stigmatis fortiter infuscatis, venis nigris.

Long. 5 mm.

♀. This is very similar to the last species, except in colour, and may possibly be a variety, but the sheath of the ovipositor is distinctly shorter, being scarcely more than one-quarter of the length of the abdomen, and the enclosed area on the median segment is a little broader and distinctly rhomboidal. The pubescence on the dorsal surface of the median segment and the sides of the scutellum is much shorter and more sparse. The antennæ are 37-jointed.

*Hab.* Thursday Island, Queensland (*Turner*), May 1902.

In all Australian species of the genus here described the radius beyond the second transverse cubital nervure and also that nervure itself are only indicated, not fully developed as in the European *C. saltator*, Fabr. This condition, however, appears to be common in the genus, *C. saltator* seeming to be rather exceptional.

*Cardiochiles verticalis*, sp. n.

♀. Fulva; antennis, vertice latissime, segmento dorsali sexto macula apicali, valvulis terebræ, tibiis posticis apice extremo, tarsis posticis, unguiculisque nigris; alis flavo-hyalinis, apice ad medium stigmatis fortiter infuscatis, venis basi flavis, apice infuscatis.

Long. 6 mm.

♀. Head distinctly broader than the thorax, not narrowed behind the eyes, distinctly narrowed anteriorly, face minutely and not very closely punctured; cheeks a little more than half as long as the breadth of the mandibles at their base. Antennæ 41-jointed, stout, setaceous, second joint of the flagellum shorter than the scape and no longer than the third joint. Notauli deep and smooth; median segment finely rugulose, with an enclosed ovate area in the middle, on each side of which, halfway to the lateral margin of the segment, is a longitudinal carina. Abdomen almost smooth, the punctures microscopic; the sheath of the ovipositor nearly half as long as the abdomen, deflexed, broadened, obliquely truncate at the apex. The nervulus is received much nearer to the basal nervure than in *saltator*, Fabr., or *rufator*, Roman, the distance between them being scarcely more than one-fifth of the lower margin of the first discoidal cell.

*Hab.* Mackay, Queensland (*Turner*), January 1900.

This is near *rufator*, Roman, but the colour-differences are considerable, and the ovipositor seems to be longer, and the comparative length of the basal joints of the antennæ is different. The male has the apical half of the hind femora, the hind tibiæ, except a spot at the base, and the hind tarsi black.

*Cardiochiles uniformis*, sp. n.

♀. Fulva; mandibulis apice extremo, antennis, mesosterno apice, segmentis dorsalibus quarto, quinto, sextoque macula mediana, valvulis terebræ, tibiis posticis apice, tarsis posticis incisuris fulvis, unguiculisque nigris; mesonoto fasciis longitudinalibus 4 brunneis; alis pallidissime fusco-hyalinis; stigmatibus fusco, basi macula parva flava; venis fuscis, apice pallidis.

♂. Femiinæ similis; vertice fascia lata curvata utrinque circum ocellos, mesonoti fasciis, segmentoque septimo dorsali macula mediana nigris.

Long. 5 mm.

♀. Head a little broader than the thorax, minutely and not very closely punctured, cheeks about as long as the breadth of the mandibles at their base. Antennæ setaceous, second joint of the flagellum as long as the scape, a little longer than the third joint; 35 joints in the antennæ in both sexes. Notauli smooth at the base, distinctly crenulated posteriorly; dorsal surface of the median segment very feebly rugulose, occupied by a very broad cordiform area. Abdomen smooth and shining; sheath of the ovipositor truncate at the apex, broadened from the base, about one-third of the length of the abdomen. Nervulus separated from the basal nervure by a distance not exceeding one-fifth of the length of the first discoidal cell on the discoideus.

*Hab.* Mackay, Queensland (*Turner*), February to April 1900.

There is much variation in the size and intensity of the black marks on the vertex and mesonotum in both sexes, the female occasionally having a small spot on each side close to the posterior ocelli and the male often having the vertex entirely fulvous. The female has the marks on the mesonotum either black or brown. This seems to be closely allied to *C. rufator*, Roman, differing in the colour of the wings, the position of the nervulus, and the number of joints in the antennæ. The latter character may vary.

#### *Cardiochiles rufator*, Roman.

*Cardiochiles rufator*, Roman, Arkiv f. Zool. ix, p. 17 (1915).

*Hab.* Kimberley, N.W. Australia.

I have not seen this species.

The species with cylindrical hind metatarsi would come into Cameron's genus *Ernestiella*, which was formed for the Ceylon species *nigromaculata*, Cam., which is closely allied to the Australian species, but I cannot regard the distinctions as of generic importance. Cameron himself some years after publishing the name *Ernestiella* described an allied Indian species as *Cardiochiles fulvus*. I consider that *Schönlandiella*, Cam., founded on a South African species, is also a synonym of *Cardiochiles*.

## Subfamily DORYCTINÆ.

## Key to the Australian Genera of the Doryctinæ.

1. Hind coxæ with a long spine; parapsidal furrows obsolete; a strongly curved nervure springing from the apical angle of the mediellan cell and dividing the discoidellan cell . . . . . *Liodoryctes*, Szép.  
 Hind coxæ unarmed; parapsidal furrows well developed; discoidellan cell not divided by a curved nervure. . . . . 2.
2. Pronotum armed with an upright spine on each side, the first and basal area of the second tergite longitudinally striated . . *Acanthodoryctes*, Turn.  
 Pronotum unarmed; basal tergite longer than broad, sparsely punctured; second tergite smooth . . . . . *Syngaster*, Brullé.

Key to the Species of *Liodoryctes*.

♀ ♀.

1. Second tergite smooth; mesonotum reddish. 2.  
 Second tergite finely longitudinally striated on the basal area; mesonotum black . . *L. nigrodorsalis*, Turn.
2. Ovipositor very distinctly shorter than the abdomen; median segment black . . . . . *L. erythrothorax*, Turn.  
 Ovipositor at least as long as the abdomen, median segment reddish. . . . . 3.
3. Head yellowish red . . . . . *L. australiensis*, Szép.  
 Head black . . . . . *L. atriceps*, Turn.

*Liodoryctes nigridorsalis*, sp. n.

♀. Fulvo-brunnea; mandibulis apice, antennis, pronoto, mesonoto, scutello, propleuris, mesopleuris, tarsi articulo apicali, trochanteribus intermediis subtus, coxisque posticis nigris; capite, segmento mediano, abdomine subtus, segmento dorsali primo, segmentoque dorsali secundo lateribus flavis; alis fuscohyalinis, basi flavidulis, venis fusco-ferrugineis, stigmatibus flavo; terebra abdomine paullo longiore, nigra.  
 Long. 9 mm., tereb. long. 5 mm.

♀. Face below the base of the antennæ rugulose; front shallowly concave between the anterior ocellus and the base of the antennæ. Thorax smooth and shining; median segment covered with very large punctures. First tergite more than half as broad again at the apex as long, irregularly and

finely longitudinally striated, with punctures between the striæ in the middle; curved basal area of second tergite finely longitudinally striated, the apex almost smooth. Ovipositor longer than the abdomen by about one-fifth. Intermediate tarsi a little shorter than the tibiæ; hind coxæ with two spines, the basal one long and whitish, the apical one very small and black.

*Hab.* Port Darwin (*Turner*), December.

Differs from *australiensis*, Szép., in the colour of the thorax, in the much more extensive striation of the first tergite, in the striation of the basal area of the second tergite which is wholly smooth in *australiensis*, and in the colour of the stigma.

*Liodoryctes erythrothorax*, sp. n.

♀. Flavidula; mandibulis apice, antennis, prothorace, segmento mediano, segmentis dorsalibus quinto sequentibusque, terebræ valvulis, coxis intermediis posticisque, trochanteribusque posticis nigris; mesothorace, scutello, postscutello, maculaque basali segmenti mediani rufis; alis fusco-hyalinis, venis basi fuscis, apice testaceis; stigmatè testaceo, margine costali late fusco; terebra ferruginea.

♂. Feminae simillimus.

Long., ♀ 9-10 mm., ♂ 6 mm.

♀. Very similar to *australiensis*, differing in the shorter ovipositor, which is distinctly shorter than the abdomen, in the colour of the thorax and median segment, and in the wholly black spine of the hind coxæ.

♂. The whole second tergite is closely and finely longitudinally striated; the first tergite less regularly striated, with punctures intermingled, but more distinctly striated than in the female; the apical tergites very closely and finely punctured. The apical half of the spine of the hind coxæ is yellow. The wings are paler than in the female, the stigma almost entirely dull testaceous.

*Hab.* Mackay, Queensland (*Turner*), January and February.

*Liodoryctes atriceps*, sp. n.

♀. Ferruginea; capite, coxis intermediis posticisque, tarsis articulo apicali, segmentis dorsalibus tribus apicalibus, valvulisque terebræ nigris, pedibus intermediis posticisque fuscis; abdomine brunneo, subtus flavo, segmento dorsali primo basi, segmentoque secundo

lateribus flavis; alis pallide fuscis, stigmato venisque nigris; terebra abdomine paullo longiore.

Long. 11 mm. ; terebræ long.  $5\frac{1}{2}$  mm.

♀. Very similar to *australiensis* and *erythrothorax*, differing from both in the black head and in the more distinct longitudinal striation of the first tergite. The spine of the hind coxæ is pale, not black as in *erythrothorax*.

*Hab.* Mackay, Queensland (*Turner*).

### *Liodoryctes australiensis*, Szép.

*Acanthobracon australiensis*, Szép. Termes. Füzetek. xxv. p. 48 (1902). ♂.

*Neotrimorus australiensis*, Szép. Wytzman's Genera Insect. xxii., Braconidæ, p. 64 (1904).

*Liodoryctes australiensis*, Szép. Ann. Mus. Nat. Hungar. iv. p. 599 (1906).

This species is variable in colour, the tergites are usually fulvous brown, with the basal segment and sides of the second pale yellowish, but in a specimen taken by me at Kuranda in May 1913 the brown is replaced by black. Ovipositor distinctly longer than abdomen.

*Hab.* Cooktown (*D. Le Souef*); Kuranda and Mackay (*Turner*).

### GENUS ACANTHODORYCTES, gen. nov.

Front strongly concave between the anterior ocellus and the base of the antennæ; pronotum depressed, armed with two spines; basal half of the scutellum depressed and coarsely striated; first tergite as broad at the apex as long, coarsely longitudinally striated, second tergite punctured-striate on the rounded basal area; second abscissa of the radius about twice as long as the second transverse cubital nervure; radial cell of hind wing not divided, discoidellian cell not divided. Ovipositor nearly as long as the abdomen.

### *Key to the Species of Acanthodoryctes.*

1. Spines of the pronotum strong, upright, and acute; median segment covered with close-lying hairs, without carinæ on the basal half; head yellow ..... *A. morleyi*, Frogg.
- Spines of the pronotum reduced to tubercles;

median segment without close-lying hairs,  
with two strong carinæ from base to apex;  
head black ..... *A. gilberti*, Turn.

Type of the genus, *Iphiaulax morleyi*, Frogg.

*Acanthodoryctes gilberti*, sp. n.

♀. Rufo-testacea; capite pedibusque nigris; segmento dorsali primo pallide flavo; segmentis ventralibus albidis, lateribus nigro-marginatis; alis fuscis, venis nigris, stigmatibus fusco-ferrugineo.

Long. 8 mm.; terebræ long. 3 mm.

♀. Face finely punctured, sparsely clothed with long cinereous hairs. Pronotum slightly concave, margined, with a short carina from the hind margin to the middle, a small acute tubercle on each side; parapsidal furrows distinct. Postscutellum with three strong longitudinal carinæ; median segment with two strong longitudinal carinæ from base to apex. First tergite about as broad at the apex as long, coarsely longitudinally striated, the sides with a deep broad longitudinal groove between carinæ, two longitudinal carinæ from the base converging towards the apex, the apical half of the segment with short irregular longitudinal striæ; second suture distinct; second tergite with a broadly rounded basal area, which is longitudinally striated at the base, punctured at the apex. Sheath of the ovipositor black. Second abscissa of the radius a little less than twice as long as the second transverse cubital nervure.

*Hab.* Mackay, Queensland (*G. Turner*), April.

*Acanthodoryctes morleyi*, Frogg.

*Iphiaulax morleyi*, Frogg. Agricultural Gazette of New South Wales, xxvii. p. 566 (1916). ♀.

♀. This is a larger species than *A. gilberti* and differs much in colour, the head being yellow, the mesonotum, scutellum, and postscutellum ferruginous, the pronotum and pleuræ black; the median segment and three basal abdominal segments brown, the apical segments black; the legs brown, variegated with black. The second abscissa of the radius is more than twice as long as the second transverse cubital nervure; the spines of the pronotum are strong and erect. Median segment punctured reticulate, with two longitudinal carinæ on the apical slope; first tergite almost



as broad at the apex as long, longitudinally striated, with a distinct median carina, and two longitudinal carinæ on the sides, the space between the latter increasing in breadth towards the apex and covered with close-lying yellowish-white hairs. The male has the four basal tergites rugose.

*Hab.* The East Coast of Australia as far north as Townsville, and inland as far as Hermannsburg, Northern Territory.

The South-American genus *Binarea* has a single spine on the pronotum and has the radial cell of the hind wing divided, the sculpture is also very different.

*A. morleyi* was submitted by Froggatt to C. Morley before description, and placed in *Iphiaulax* on his authority.

#### GENUS SYNGASTER, Brullé.

Brullé described two species from Australia, *S. lepida* and *S. annulicornis*. The former is a fairly common species in S.E. Australia and Tasmania, and ranges as far north as Townsville. The white median segment and first tergite are very conspicuous. In the typical form the legs are black, but a variety taken by Mr. Froggatt at Narrabeen, N.S.W., has the femora, tibiæ, and tarsi red. I have not seen specimens of *S. annulicornis*, and am doubtful if it belongs to the same genus.

Doubtless other genera of Doryctinæ will be recorded from Australia when larger collections are available.

#### VIII.—Further Notes on the Asilidæ of Australia.

By GERTRUDE RICARDO.

FROM small collections of Asilidæ sent me by Mr. C. Gibbons and Mr. Frank Taylor for identification the following descriptions of new species and notes on old species are taken, with the addition of any new material in the Brit. Mus. Coll. The types are almost all presented to the Brit. Mus. Coll. by the kindness of the two above-named gentlemen.

#### DASYPOGONINÆ.

*Bathypogon testaceovittatus*, ♂ ♀, Macq. Dipt. Exot., Suppl. v. p. 70, pl. ii. fig. 1 (*Dasyogon*).

Two females from Sydney (*C. Gibbons*) I believe belong to the above species.